Complete Summary

GUIDELINE TITLE

Prevention and management of pain and stress in the neonate.

BIBLIOGRAPHIC SOURCE(S)

American Academy of Pediatrics. Prevention and management of pain and stress in the neonate. American Academy of Pediatrics. Committee on Fetus and Newborn. Committee on Drugs. Section on Anesthesiology. Section on Surgery. Canadian Paediatric Society. Fetus and Newborn Committee. Pediatrics 2000 Feb;105(2):454-61. [110 references]

GUIDELINE STATUS

This is the current release of the guideline.

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SCOPE

DISEASE/CONDITION(S)

Pain and stress

GUIDELINE CATEGORY

Management
Prevention

CLINICAL SPECIALTY

Pediatrics

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Hospitals
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To increase awareness that neonates experience pain.
- To provide a physiological basis for neonatal pain and stress assessment and management by health care professionals.
- To make recommendations for reduced exposure of the neonate to noxious stimuli and to minimize associated adverse outcomes.
- To recommend effective and safe interventions that relieve pain and stress.

TARGET POPULATION

Neonates

INTERVENTIONS AND PRACTICES CONSIDERED

1. Environmental changes (avoidance of unnecessary noxious stimuli [acoustic, visual, tactile, vestibular]).
2. Nonpharmacological (behavioral) measures (such as, simple comfort measures, including swaddling, nonnutritive sucking [pacifier], and positioning).
3. Pharmacological agents, such as anesthesia (general, regional, local infiltration), opioids, benzodiazepines, methadone, nonsteroidal anti-inflammatory drugs, barbiturates, and chloral hydrate.

Note: Phenothiazines are considered but not recommended.

MAJOR OUTCOMES CONSIDERED

- Pain
- Stress

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

- To evaluate and reduce the stress and pain experienced by neonates, validated measures and assessment tools must be used consistently. The assessments should continue as long as the neonate requires treatment for stress or pain.
- Health care professionals should use appropriate environmental, nonpharmacological (behavioral), and pharmacological interventions to prevent, reduce, or eliminate the stress and pain of neonates.
- Pharmacological agents with known pharmacokinetic and pharmacodynamic properties and demonstrated efficacy in neonates should be used. Agents known to compromise cardiorespiratory function should be administered only by persons experienced in neonatal airway management and in settings with the capacity for continuous monitoring.
- Health care institutions should develop and implement patient care policies to assess, prevent, and manage pain in neonates, including those receiving palliative care.
- Educational programs to increase the skills of health care professionals in the assessment and management of stress and pain in neonates should be provided.
- There is a need for development and validation of neonatal pain assessment tools that are easily applicable in the clinical setting.
- For research purposes, a minimal set of well-defined outcome measures, including short- and long-term effects of interventions aimed at reducing stress and pain in the neonate, should be identified to permit statistical synthesis of data (meta-analysis) and more accurate estimates of effect size.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting each recommendation is not specifically stated.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Prevention, reduction, or elimination of pain and stress.

POTENTIAL HARMS

Regional Anesthesia:

- Careful calculation of doses is mandatory to avoid toxic effects for all uses of local anesthetic agents and for all other medications used to provide analgesia, sedation, and relief of anxiety. Accurate calculation is a particular concern in the care of preterm and term neonates in whom differences in

protein binding and metabolism can result in local anesthetic drug accumulation and toxic effects.

Opioids:

- Opioids may be associated with adverse effects on the respiratory and cardiovascular systems.
- The need for continued treatment with the opioid to manage pain increases the possibility of tolerance that requires dose escalation to maintain analgesia and slow withdrawal of the drug to avoid abstinence syndrome.
- Intravenous boluses of the synthetic opioids (e.g., fentanyl, sufentanil, alfentanil) may be associated with glottic and chest wall rigidity.
- Opioid antagonists must be used with caution in neonates who have received prolonged treatment with opioids (greater than four days). In this situation, an antagonist (e.g., naloxone) may precipitate acute opioid withdrawal with seizures, hypertension, and other adverse clinical consequences.
- Meperidine is not recommended for prolonged administration owing to the possibility of the accumulation of toxic metabolites capable of causing seizures.
- When opioids or other sedating medications, such as benzodiazepines, are administered for a prolonged period, physical dependence and tolerance may develop, thus increasing the opioid or sedative requirements to maintain patient comfort.

Pharmacological agents:

- Long-term use of many sedatives and hypnotics includes the risks of tolerance, dependency, and withdrawal.
- Sedatives and hypnotics may cause respiratory and cardiovascular depression.
- Use of combined therapy with a sedative or hypnotic and opioid necessitates a decrease in dosage of each. Failure to reduce dosage when used in combination increases the risk of adverse effects, such as respiratory depression. In addition, certain combinations, such as fentanyl and midazolam, should not be given as rapid infusions because this combination is associated with severe systemic hypotension.
- Of the benzodiazepines, midazolam has been approved for use in neonates, and a randomized, controlled trial has demonstrated sedative effects. However, adverse hemodynamic effects and abnormal movements have been associated with its use in neonates.
- Chloral hydrate: In premature neonates, repeated doses may be associated with adverse effects (e.g., central nervous system depression, arrhythmias, and renal failure).

QUALIFYING STATEMENTS

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The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2000 Feb

GUIDELINE DEVELOPER(S)

American Academy of Pediatrics - Medical Specialty Society
Canadian Paediatric Society - Medical Specialty Society

SOURCE(S) OF FUNDING

American Academy of Pediatrics

GUIDELINE COMMITTEE

1. American Academy of Pediatrics:
    - Committee on Fetus and Newborn
    - Committee on Drugs
    - Section on Anesthesiology
    - Section on Surgery
2. Canadian Paediatric Society:
    - Fetus and Newborn Committee

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

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GUIDELINE AVAILABILITY

Electronic copies: Available from the American Academy of Pediatrics (AAP) Policy Web site.

Print copies: Available from AAP, 141 Northwest Point Blvd., P.O. Box 927, Elk Grove Village, IL 60009-0927.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on November 16, 2000. The information was verified by the guideline developer on January 8, 2001.

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